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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,893	05/22/2006	Per Stobbe	HER07 P-113	7210
28101	7590	01/26/2009	EXAMINER	
VAN DYKE, GARDNER, LINN & BURKHART, LLP			GREENE, JASON M	
SUITE 207				
2851 CHARLEVOIX DRIVE, S.E.			ART UNIT	PAPER NUMBER
GRAND RAPIDS, MI 49546			1797	
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			01/26/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/563,893	STOBBE ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jason M. Greene	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-28 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-28 is/are rejected.
- 7) Claim(s) 10 is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 09 January 2006 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____ .
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date <u>6/5/06</u> .	6) <input type="checkbox"/> Other: ____ .

## DETAILED ACTION

### ***Claim Objections***

1. Claim 10 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 10 recites the ceramic grains being non-oxide and of the same type, but claim 1, from which claim 10 depends, already teaches such a limitation since the grains are both recited as being  $\alpha$ -SiC.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since

the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation "a porous ceramic body" in line 1, and the claim also recites "especially of a filter membrane" which is the narrower statement of the range/limitation.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-13 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Great Britain Patent GB 790,762 in view of International Patent

Application Publication WO 00/01463, Zeller et al. (US 7,112,237B2) and Blaney (US 5,679,248).

GB 790,762 discloses a method for the production of filter membrane (see page 1, lines 42-44) comprising selection of a first ceramic (SiC) powder with a first grain class size, selection a second ceramic (SiC) powder with a second grain size class that is substantially smaller than the first grain size class, mixing the first and second ceramic powders to produce a powder with a bimodal grain size distribution, shaping of a molded body from the powder mixture, and heating and conditioning of the molded body at a temperature and for a period of time such that, through a recrystallization of the molded body, the grains with the second grain size are dissolved, and through attachment of the material of the second grains to the first ceramic grains, these are firmly linked to each other, wherein the grains of the first and second powders have a chosen maximum and minimum grain size, wherein the first and second ceramic powders are present in a slurry and the shaping of the molded body is effected by casting on a substrate (the plaster of Paris mold), and including drying of the molded body prior to the heating and conditioning, wherein the first and second powders have narrow grain size distributions, wherein the heating and conditioning comprises selecting the temperature and firing duration such that generally all grains of the second ceramic powder are no longer present in the microstructure of the finished ceramic body and such that the grain size of the first ceramic powder remains substantially unchanged, and wherein the mixing ratio of the first and second ceramic powders is 6:4 (see Ex. 2) in page 1, line 17 to page 4, line 48.

GB 790,762 does not teach the first and second powders comprising  $\alpha$ -SiC or several layers being formed.

WO 00/01463 teaches a similar method wherein  $\alpha$ -SiC ceramic powders are used since they do not react with precious metal coatings (catalysts), are more readily available commercially, and are preferred since the final product is  $\alpha$ -SiC in page 8, line 17 to page 9, line 26 and Ex. 1 on pages 16-17.

Blaney teaches forming a filter comprising several layers of differing pore structure to improve efficiency and decrease pressure drop in Fig. 3 and col. 6, line 65 to col. 7, line 19. Zeller et al. discloses a multilayer sintered filter structure wherein a second layer is cast on a first, coarser, layer in Figs. 1-3.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the multilayer structure suggested by Blaney and Zeller et al. into the method of GB 790,672 to provide a more efficient filter structure, as suggested by Blaney and Zeller et al.

With regard to claims 6, 11, 13 and 24, while the GB 790,762 reference does not teach the recited grain sizes, one of ordinary skill in the art at the time the invention was made would have recognized that the grain sizes could be selected as a matter of design choice to optimize the filtering performance in a given application. It is especially noted that WO 00/01463 teaches that grain sizes from fraction of a  $\mu$ m to several mm may be used.

6. Claims 14-21 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Great Britain Patent GB 790,762 in view of International Patent Application Publication WO 00/01463, Zeller et al. (US 7,112,237B2) and Blaney (US 5,679,248).

GB 790,762 discloses the claimed filter except for the first and second powders comprising  $\alpha$ -SiC and the filter comprising several layers.

WO 00/01463 teaches a similar filter wherein  $\alpha$ -SiC ceramic powders are used since they do not react with precious metal coatings (catalysts), are more readily available commercially, and are preferred since the final product is  $\alpha$ -SiC in page 8, line 17 to page 9, line 26 and Ex. 1 on pages 16-17.

Blaney teaches forming a filter comprising several layers of differing pore structure to improve efficiency and decrease pressure drop in Fig. 3 and col. 6, line 65 to col. 7, line 19. Zeller et al. discloses a multilayer sintered filter structure wherein a second layer is cast on a first, coarser, layer in Figs. 1-3.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the multilayer structure suggested by Blaney and Zeller et al. into the filter of GB 790,672 to provide a more efficient filter structure, as suggested by Blaney and Zeller et al.

With regard to claims 20 and 28, while the GB 790,762 reference does not teach the filter exhibiting the recited flow, it would inherently exhibit the recited flow since it has the same structure as the claimed filter.

7. Claims 1-13 and 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Way et al. (US 6,214,078 B1) in view of International Patent Application Publication WO 00/01463, Zeller et al. (US 7,112,237B2) and Blaney (US 5,679,248).

Way et al. discloses a method for the production of filter membrane comprising selection of a first ceramic (SiC) powder with a first grain class size, selection a second ceramic (SiC) powder with a second grain size class that is substantially smaller than the first grain size class, mixing the first and second ceramic powders to produce a powder with a bimodal grain size distribution, shaping of a molded body from the powder mixture, and heating and conditioning of the molded body at a temperature and for a period of time such that, through a recrystallization of the molded body, the grains with the second grain size are dissolved, and through attachment of the material of the second grains to the first ceramic grains, these are firmly linked to each other, wherein the grains of the first and second powders have a chosen maximum and minimum grain size, wherein the first and second ceramic powders are present in a slurry and the shaping of the molded body is effected by casting on a substrate (the mold), and including drying of the molded body prior to the heating and conditioning, wherein the first and second powders have narrow grain size distributions, wherein the heating and conditioning comprises selecting the temperature and firing duration such that generally all grains of the second ceramic powder are no longer present in the microstructure of the finished ceramic body and such that the grain size of the first ceramic powder remains substantially unchanged, and wherein the mixing ratio of the first and second

ceramic powders is 1:1 to 2:1 (the intermediate grit to the fine grit powders, see col. 3, lines 18-24) in page 1, line 17 to page 4, line 48.

GB 790,762 does not teach the first and second powders comprising  $\alpha$ -SiC or several layers being formed.

WO 00/01463 teaches a similar method wherein  $\alpha$ -SiC ceramic powders are used since they do not react with precious metal coatings (catalysts), are more readily available commercially, and are preferred since the final product is  $\alpha$ -SiC in page 8, line 17 to page 9, line 26 and Ex. 1 on pages 16-17.

Blaney teaches forming a filter comprising several layers of differing pore structure to improve efficiency and decrease pressure drop in Fig. 3 and col. 6, line 65 to col. 7, line 19. Zeller et al. discloses a multilayer sintered filter structure wherein a second layer is cast on a first, coarser, layer in Figs. 1-3.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the multilayer structure suggested by Blaney and Zeller et al. into the method of Way et al. to provide a more efficient filter structure, as suggested by Blaney and Zeller et al.

With regard to claims 6, 11, 13 and 24, while the Way et al. reference does not teach the recited grain sizes, one of ordinary skill in the art at the time the invention was made would have recognized that the grain sizes could be selected as a matter of design choice to optimize the filtering performance in a given application. It is especially noted that WO 00/01463 teaches that grain sizes from fraction of a  $\mu$ m to several mm may be used.

8. Claims 14-21 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Way et al. (US 6,214,078 B1) in view of International Patent Application Publication WO 00/01463, Zeller et al. (US 7,112,237B2) and Blaney (US 5,679,248).

Way et al. discloses the claimed filter except for the first and second powders comprising  $\alpha$ -SiC and the filter comprising several layers.

WO 00/01463 teaches a similar filter wherein  $\alpha$ -SiC ceramic powders are used since they do not react with precious metal coatings (catalysts), are more readily available commercially, and are preferred since the final product is  $\alpha$ -SiC in page 8, line 17 to page 9, line 26 and Ex. 1 on pages 16-17.

Blaney teaches forming a filter comprising several layers of differing pore structure to improve efficiency and decrease pressure drop in Fig. 3 and col. 6, line 65 to col. 7, line 19. Zeller et al. discloses a multilayer sintered filter structure wherein a second layer is cast on a first, coarser, layer in Figs. 1-3.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the multilayer structure suggested by Blaney and Zeller et al. into the filter of Way et al. to provide a more efficient filter structure, as suggested by Blaney and Zeller et al.

With regard to claims 20 and 28, while the Way et al. reference does not teach the filter exhibiting the recited flow, it would inherently exhibit the recited flow since it has the same structure as the claimed filter.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Butkus, Maier et al., Noguchi et al. and Shimai et al. references disclose similar systems
  
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (571) 272-1157. The examiner can normally be reached on Monday - Friday (9:00 AM to 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Primary Examiner  
Art Unit 1797

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1/17/09

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